

WHAT IS CLAIMED IS:

1. A method of purifying radiolabelled compounds, comprising:
 - a) loading onto a fluorous polymer a radiolabelled compound precursor comprising a fluoroalkyl tin moiety;
 - b) reacting the radiolabelled compound precursor with a radiolabel delivering compound to give a radiolabelled compound, wherein the fluoroalkyl tin moiety is replaced by a radiolabel; and
 - c) eluting the radiolabelled compound from the fluorous polymer.
2. The method of claim 1, wherein the radiolabelled compound comprises an aryl moiety.
3. The method of claim 1, wherein the radiolabelled compound comprises an aryl acid.
4. The method of claim 1, wherein the radiolabelled compound is a benzoic acid.
5. The method of claim 1, wherein the radiolabelled compound is a benzamide.
6. The method of claim 5, wherein the benzamide is an *N*-(2-diethylaminoethyl)benzamide.
7. The method of claim 1, wherein the radiolabelled compound is a benzylamine.
8. The method of claim 1, wherein the radiolabelled compound is a benzylguanidine.
9. The method of claim 1, wherein the radiolabelled compound is a benzylamine-GFLM(f).
10. The method of claim 1, wherein the fluoroalkyl tin moiety is tris(perfluorohexylethyl)tin.
11. The method of claim 1, wherein the fluorous polymer is a fluorous silica.
12. The method of claim 1, wherein the radiolabel is selected from the group consisting of ^{99m}Tc , ^{94m}Tc , ^{186}Re , ^{105}Rh , ^{18}F , ^{11}C , ^{125}I , ^{123}I , ^{131}I , ^{76}Br , and ^{111}At .
13. The method of claim 13, wherein the radiolabel is selected from the group consisting of ^{18}F , ^{125}I , ^{123}I , and ^{131}I .
14. The method of claim 1, wherein the radiolabelled compound is a benzoic acid, the fluoroalkyl tin moiety is tris(perfluorohexylethyl)tin, the fluorous polymer is fluorous silica, and the radiolabel is ^{18}F .

15. The method of claim 1, wherein the radiolabelled compound is a benzoic acid, the fluoroalkyl tin moiety is tris(perfluorohexylethyl)tin, the fluorous polymer is fluorous silica, and the radiolabel is ^{125}I .
16. The method of claim 1, wherein the radiolabelled compound is an *N*-(2-diethylaminoethyl)benzamide, the fluoroalkyl tin moiety is a tris(perfluorohexylethyl)tin, the fluorous polymer is fluorous silica, and the radiolabel is ^{123}I .
17. The method of claim 1, wherein the radiolabelled compound is benzylamine, the fluoroalkyl tin moiety is tris(perfluorohexylethyl)tin, the fluorous polymer is fluorous silica, and the radiolabel is selected from the group consisting of ^{123}I and ^{131}I .
18. The method of claim 1, wherein the radiolabelled compound is a benzylguanidine, the fluoroalkyl tin moiety is tris(perfluorohexylethyl)tin, the fluorous polymer is fluorous silica, and the radiolabel is selected from the group consisting of ^{123}I and ^{131}I .
19. The method of claim 1, wherein the radiolabelled compound is a benzylamine-GFLM(f), the fluoroalkyl tin moiety is tris(perfluorohexylethyl)tin, the fluorous polymer is fluorous silica, and the radiolabel is selected from the group consisting of ^{123}I and ^{131}I .